

484344

ISSI Consulting Group

999 18th Street, Suite 1450

Denver, CO 80202

ph 303.292.4142 • fax 303.292.4926



U.S. SBA 8(a) certified
postmaster@issilnc.com
www.issilnc.com

MEMORANDUM

To: Mary Goldade
From: Bill Brattin/Tracy Hammon
Date: 7/28/00
Subj: Libby Exposure Monitoring Data
Cc: Paul Peronard

Mary:

In accord with your request, we have prepared a report which summarizes the objectives and procedures for the exposure monitoring project at the Export and Screening Plants in Libby, Montana. Additionally, this report contains copies of analytical results for this project received by ISSI Consulting Group, Inc. as of July 28, 2000.

The objective of the exposure monitoring sampling program is two-fold. The first is to collect samples of air that reflect the concentrations of asbestos in air of the breathing zone of people who may have been exposed in the recent past (i.e., after the time that W.R. Grace sold the property) while engaged in activities such as sweeping, moving materials, and other common activities. To mimic these exposure scenarios, field team members performed cleaning and other activities that approximate work performed at the sites in recent years past, while wearing personal air monitoring equipment. Team members wore personal protective equipment (Level C) during sample collection. Second, a series of ambient air samples were collected from fixed air monitors at several location at the site in order to address the general level of exposure in these locations. Further details pertaining to the sample collection are provided below.

**Exposure Monitoring – Export Plant
Personal and Ambient Air Sampling
Conducted on June 25, 2000**

Introduction

PES conducted personal breathing zone and ambient air monitoring while MARCOR employees performed routine tasks at the Lumber Yard (Former Export Facility). The air monitoring was performed by PES Industrial Hygienist, Mr. Brian Stewart on June 25-26, 2000. The sampling was conducted while two MARCOR employees performed routine tasks in two separate areas of the Lumberyard.

One employee performed general housecleaning tasks in the break room of the Planer Building. The general housekeeping tasks consisted of dry sweeping, vacuuming, and dusting. The employee conducted the tasks for approximately two hours. The second employee moved bags of insulation and dry swept the floors in the Baghouse Building. This employee also worked for approximately two hours. No dust suppression was performed. Also, the doors to the buildings were kept closed during the activities allowing for minimal ventilation.

PES collected duplicate samples for W.R. Grace at each sampling location, including the personal samples.

Personal Air Monitoring

PES placed two SKC® personal air-monitoring pumps on each employee. (One pump was used to collect the replicate air sample for W.R. Grace.) These pumps operated at a flow rate of approximately 2.0 liters per minute (l/min) for the duration of the tasks. As stated earlier, both tasks had a duration of approximately two hours. Three-piece, 25-millimeter diameter cassettes, with an open-faced 50-millimeter electrically conductive extension cowl were used as sampling media. Each cassette was loaded with a mixed cellulose ester filter having a pore size less than or equal to 0.45 μm . The filter was backed by a 5- μm pore size mixed cellulose ester backup filter and supported by a cellulose support pad.

The air sampling pumps were calibrated, with sampling media in-line, prior to the beginning of the sampling period and again at the end of the sampling period. Where a difference between the pre-test and post-test calibrations are identified, PES used the average flow rate to calculate the volume of air collected.

Ambient Air Monitoring

PES collected one ambient air sample inside the break room of the Planer Building and one inside of the Baghouse Building during the performance of the tasks. While the sampler was placed on the floor, the air filters were elevated into the breathing zone. PES utilized high volume sampling pumps to collect the ambient samples. Two high volume pumps were set up at each location. (One pump was used to collect the replicate air sample for W.R. Grace.) The high volume sampling pumps operated at a flow rate of approximately 10.0 liters per minute (l/min) for the duration of the tasks. Three-piece, 25-millimeter diameter cassettes, with an open-faced 50-millimeter electrically conductive extension cowl were used as sampling media. Each cassette was loaded with a mixed cellulose ester filter having a pore size less than or equal to 0.45 μm . The filter was backed by a 5- μm pore size mixed cellulose ester backup filter and supported by a cellulose support pad.

The air sampling pumps were calibrated, with sampling media in-line, prior to the beginning of the sampling period and again at the end of the sampling period. Where a difference between the pre-test and post-test calibrations are identified, PES used the average flow rate to calculate the volume of air collected.

Final Clearance Air Monitoring

Several hours after the tasks had been completed, PES collected one final clearance air sample inside the break room of the Planer Building and one inside of the Baghouse Building. PES utilized high volume sampling pumps to collect the final clearance samples. Two high volume pumps were set up at each location. (One pump was used to collect the duplicate air sample for W.R. Grace.) The high volume sampling pumps operated at a flow rate of approximately 10.0 liters per minute (l/min) for 120 minutes. Three-piece, 25-millimeter diameter cassettes, with an open-faced 50-millimeter electrically conductive extension cowl were used as sampling media. Each cassette was loaded with a mixed cellulose ester filter having a pore size less than or equal to 0.45 μm . The filter was backed by a 5- μm pore size mixed cellulose ester backup filter and supported by a cellulose support pad.

The air sampling pumps were calibrated, with sampling media in-line, prior to the beginning of the sampling period and again at the end of the sampling period. Where a difference between the pre-test and post-test calibrations are identified, PES used the average flow rate to calculate the volume of air collected.

Sample IDs for Exposure Monitoring Sampling - Export Plant

Collection Method	Sample Date	Sample ID	Location Description
Ambient	6/25/00	1-01642	Planer Breakroom
		1-01643	Dup. Planer Breakroom
		1-01644	Baghouse
		1-01645	Dup. Baghouse
		1-01646	Blank
		1-01647	Blank
		1-01648	Blank
		1-01649	Blank
Personal Air Monitors	6/25/00	1R-00039	Breakroom-Sweeping
		1R-00040	Dup. Breakroom-Sweeping
		1R-00041	Blank
		1R-00042	Baghouse
		1R-00043	Dup. Baghouse
		1R-00044	Blank
		1R-00045	Blank
		1R-00046	Blank
Clearance	6/26/00	1-01650	Planer Breakroom
		1-01651	Dup. Planer Breakroom
		1-01652	Baghouse
		1-01653	Dup. Baghouse
		1-01654	Blank
		1-01655	Blank
		1-01656	Blank
		1-01657	Blank

**Exposure Monitoring –Screening Plant
Personal And Ambient Air Sampling
Conducted on July 21 and 22, 2000.**

Introduction

PES conducted personal breathing zone and ambient air monitoring while MARCOR employees performed routine tasks at the RainTree Nursery (Former Screening Plant Facility). The air monitoring was performed by PES Industrial Hygienist, Mr. Gregory Parana on July 21-22, 2000. The sampling was conducted while three MARCOR employees performed routine tasks in three separate areas of the nursery.

On July 21, 2000, one employee performed work in the northwest greenhouse. The task consisted of lifting styrofoam planting boxes and placed them on a wooden pallet and was conducted for approximately two hours. No dust suppression was performed. The northwest greenhouse is a partially open structure, therefore ventilation control was not possible.

On July 22, 2000, one employee performed general housecleaning tasks in the long shed. The general housekeeping tasks consisted of dry sweeping the floor surface. The employee conducted the task for approximately two hours. No dust suppression was performed. The long shed's north wall along with large bay doors on the East Side are open to the outside, therefore ventilation control was not possible.

On July 22, 2000, one employee bagged sacks of mushrooms and soil in the mushroom tunnels. The employee also dry swept the debris on the floor surface inside the tunnel. The employee conducted the task for approximately two hours. No dust suppression was performed. However, the door at the entrance to the tunnel was closed during this task to control air ventilation.

PES collected duplicate samples for W.R. Grace at each sampling location, including the personal samples.

Personal Air Monitoring

PES placed two SKC® personal air-monitoring pumps on each employee. (One pump was used to collect the replicate air sample for W.R. Grace.) These pumps operated at a flow rate of approximately 2.0 liters per minute (l/min) for the duration of the tasks. As stated earlier, all tasks had a duration of approximately two hours. Three-piece, 25-millimeter diameter cassettes, with an open-faced 50-millimeter electrically conductive extension cowl were used as sampling media. Each cassette was loaded with a mixed cellulose ester filter having a pore size less than or equal to 0.45 μm . The filter was backed by a 5- μm pore size mixed cellulose ester backup filter and supported by a cellulose support pad.

The air sampling pumps were calibrated, with sampling media in-line, prior to the beginning of the sampling period and again at the end of the sampling period. Where a difference between the pre-test and post-test calibrations are identified, PES uses the lower flow rate to calculate the volume of air collected.

Ambient Air Monitoring

PES collected one ambient air sample approximately 30 feet from the northwest green house of the nursery, one ambient air sample inside the long shed and one ambient air sample inside the mushroom tunnels during the performance of the tasks. While the sampler was placed on the floor, the air filters were elevated into the breathing zone. PES utilized high volume sampling pumps to collect the ambient samples. Two high volume pumps were set up at each location. (One pump was used to collect the replicate air sample for W.R. Grace.) The high volume sampling pumps operated at a flow rate of approximately 8.5 liters per minute (l/min) for the duration of the tasks. Three-piece, 25-millimeter diameter cassettes, with an open-faced 50-millimeter electrically conductive extension cowl were used as sampling media. Each cassette was loaded with a mixed cellulose ester filter having a pore size less than or equal to 0.45 μm . The filter was backed by a 5- μm pore size mixed cellulose ester backup filter and supported by a cellulose support pad.

The air sampling pumps were calibrated, with sampling media in-line, prior to the beginning of the sampling period and again at the end of the sampling period. Where a difference between the pre-test and post-test calibrations are identified, PES uses the lower flow rate to calculate the volume of air collected.

Sample IDs for Exposure Monitoring Sampling - Screening Plant

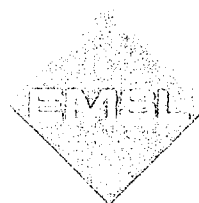
Type	Sample ID	Location*	Pump Type	Sample Date
Ambient	1R-00344	Green House	High Vol	7/21/00
Ambient Dup	1R-00345	Green House	High Vol	7/21/00
Personal	1R-00358	Green House	Low Vol.	7/21/00
Personal Dup	1R-00359	Green House	Low Vol.	7/21/00
Blank	1R-00364			
Blank	1R-00365			
Ambient	1R-00375	Longshed	High Vol	7/22/00
Ambient Dup	1R-00376	Longshed	High Vol	7/22/00
Personal	1R-00379	Longshed	Low Vol.	7/22/00
Personal Dup	1R-00382	Longshed	Low Vol.	7/22/00
Ambient	1R-00377	Tunnels	High Vol	7/22/00
Ambient Dup	1R-00378	Tunnels	High Vol	7/22/00
Personal	1R-00391	Tunnels	Low Vol.	7/22/00
Personal Dup	1R-00392	Tunnels	Low Vol.	7/22/00
Blank	1R-00383			
Blank	1R-00384			

* Activities Conducted at Each Location

Tunnels: Bagging sacks of mushrooms and soil in tunnels and sweeping debris on floor.
Longshed: Dry sweeping longshed floor.
Green House: Moving styrofoam at the west greenhouse.

ANALYTICAL RESULTS

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, New Jersey 08108
Phone: (856) 858-4800
Fax: (856) 858-1292



LETTER OF TRANSMITTAL

To: Mary Goldade	Date: July 21, 2000
US EPA	From: Robert J. De Malo
999 18 th St., Suite 5000	Re: Libby, MT Analytical Reports
Denver, CO 80202	

We are sending you: ☒ Attached ☐ Under separate cover via _____

- | | | |
|---|--|--|
| <input type="checkbox"/> Solicitation | <input type="checkbox"/> Copy of Letter | <input type="checkbox"/> Invoice #'s See Above |
| <input type="checkbox"/> Subcontract | <input type="checkbox"/> As noted | <input type="checkbox"/> Other |
| <input type="checkbox"/> Laboratory Samples | <input checked="" type="checkbox"/> Analytical Reports | |

These are transmitted as indicated below:

- | | | |
|--|--|--|
| <input type="checkbox"/> Execute _____ Original(s) | <input type="checkbox"/> Review & Comment | <input type="checkbox"/> For Approval |
| <input type="checkbox"/> Return _____ Original(s) | <input checked="" type="checkbox"/> As Requested | <input type="checkbox"/> Respond as instructed |
| <input type="checkbox"/> For Your Information/File | | <input type="checkbox"/> Other |

Remarks:

Enclosed please find the analytical reports for the following sample numbers that you requested:

1-01642, 1-01644, 1-01646, 1-01647 (EMSL report #'s ML0014 & ML0015)

1R-00039, 1R-00041, 1R-00042, 1R-00044 (EMSL report #'s ML0012 & ML0013)

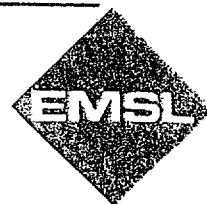
1-01650, 1-01652, 1-01654, 1-01655 (EMSL report #'s ML008 & ML009)

Copy to: _____ Signed: 

EMSL Analytical, Inc.

1 Cooper Street
Westmont, NJ 08108

Phone: (609) 858-4800 Fax: (609) 858-9551



Attn.: Tim Wall

CDM Federal Programs, Corp.
One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Tuesday, June 27, 2000

Ref Number: ML0014

Analysis Date: 6/27/00

PHASE CONTRAST MICROSCOPY (PCM) FIBER COUNT BY NIOSH METHOD 7400, ISSUE 2, 4TH EDITION, 8/15/94

Project: Ambient Air Samples

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	fibers/ mm ²	LOD fib/cc	fibers/cc
I-01642	Ambient Air Sample	6/25/00	1270.00	15.0	100	19.11	0.002	0.006
I-01644	Ambient Air Sample	6/25/00	1310.00	Sample Was Overloaded				
I-01646	Ambient Air Sample	6/25/00	0.00	<5.5	100	<7.0		
I-01647	Ambient Air Sample	6/25/00	0.00	<5.5	100	<7.0		

BLANK ID: I-01646, I-01647

Adrian Arav

Analyst

Approved
Signatory

Disclaimers: LOD = Limit of Detection. This method assumes the limit of detection is 7 fibers/mm². The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL.

Analysis performed by EMSL Mobile Lab 0

Chain of Custody Record

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2413

ML0014 (7400)
Send to:
EMSL
(On Site Laboratory)

Field Sample ID	Sample Type	Sample Date	Volume (L)	Turn Around Time	Analysis Request
1-01642	Ambient Air Sample	6/25/00	1270.0	24 Hours	PCM 7400 followed by TEM 7402
1-01644	Ambient Air Sample	6/25/00	1310.0	24 Hours	PCM 7400 followed by TEM 7402
1-01646	Blank	6/25/00	NA	24 Hours	PCM 7400 followed by TEM 7402
1-01647	Blank	6/25/00	NA	24 Hours	PCM 7400 followed by TEM 7402

Samples 1-01643 and 1-01645 were duplicates collected for Grace. Therefore, they are not included with this submittal.

END OF SUBMITTAL

Relinquished by (Signature and Company): Date/Time

Re. 8/20/00

6/27/00 0900

Received by (Signature and Company):

A.A. EMSL 6/27/00 0900

Sample Condition upon Receipt:

Relinquished by (Signature and Company): Date/Time

Received by (Signature and Company):

Sample Condition upon Receipt:

PCM Fiber Count - NIOSH Method 7400, Issue 2, 4th Edition, 8/15/94

Client: CDM Federal Programs, Corp.

Logged: 6/27/00

TAT: 1 Day

Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Date/Time Due: 6/27/00 9:00 AM

Phone: (617) 452 - 6257

Fax: (617) 452 - 8257

Project: Ambient Air Samples

Special Handling

Billing Number

ML0014

Sample ID	Location	Sample Date	# Fibers	# Fields	Volume (L)	Fibers/mm ² = E	Fibers/CC = C	Overloaded
I-01642	Ambient Air Sample	6/25/00	15	100	1270			
I-01644	Ambient Air Sample	6/25/00	—	0	1310			✓
I-01646	Ambient Air Sample	6/25/00	0	100	0			
I-01647	Ambient Air Sample	6/25/00	0	100	0			

QC Checks

1-01642

Analyst

Ad A

Scope

1

Computer

EMSL Analytical, Inc.

Phone: (856)-858-4800

Fax: (856)-858-1292

EMSL

NVLAP#200481-0

Client: CDM Federal Programs, Corp.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02142

EMSL Project ID: ML0015

Date Received: 27-Jun-00

Date Analyzed: 07-Jul-00

Report Date: 07-Jul-00

Client Project ID: Ambient Air Sample

Page: 1

Summary of Analytical Results

Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH 7402

Client	Asbestos	Asbestos	Non Asbestos	Total	Asbestos	Original (PCM)	7402 Adjusted**
Sample ID	Fibers	Type(s)	Fibers	Fibers	% of Total	Conc. (f/cc)	Concentration (f/cc)
1-01642	11.0	Tremo/Actino	3.0	14.0	79	0.006	0.005
1-01644	N/A	N/A	N/A	N/A	N/A	Over Loaded	Over Loaded

Average Number of Asbestos Fibers on Field Blanks = N/A

Average Number of Non-Asbestos Fibers on Field Blanks = N/A

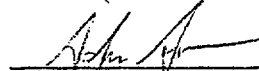
This method requires 2 field blank analyses per set. If none are submitted then the values reported are not blank corrected.

This method reports only fibers greater than or equal to 5 microns in length and 0.25 microns in width.

In the absence of PCM data the information is based on the TEM analysis only.

Method Detection Limit- 1 confirmed asbestos fiber above 95% of expected mean blank value

**Actual reported concentrations do not incorporate the analytical sensitivity of the PCM analysis. In some cases, the 7402 adjusted results may be reported "<LOD" below the analytical sensitivity of PCM (Limit of Detection)



Approved Signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel.

Analysis performed by NIOSH 7402 Issue 2 August 15, 1994

TEM make: Joel 100cxII

Detector: PGT

EMSL7402rpt6.00

7/9/00

Chain of Custody Record

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2413

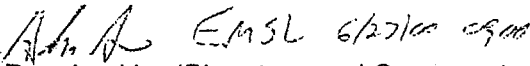
ML0015 (7402)

Send to:
EMSL
(On Site Laboratory)

Field Sample ID	Sample Type	Sample Date	Volume (L)	Turn Around Time	Analysis Request
1-01642	Ambient Air Sample	6/25/00	1270.0	24 Hours	PCM 7400 followed by TEM 7402
1-01644	Ambient Air Sample	6/25/00	1310.0	24 Hours	PCM 7400 followed by TEM 7402
1-01646	Blank	6/25/00	NA	24 Hours	PCM 7400 followed by TEM 7402
1-01647	Blank	6/25/00	NA	24 Hours	PCM 7400 followed by TEM 7402

Samples 1-01643 and 1-01645 were duplicates collected for Grace. Therefore, they are not included with this submittal.

END OF SUBMITTAL

Relinquished by (Signature and Company):	Date/Time	Received by (Signature and Company):	Sample Condition upon Receipt:
Relinquished by (Signature and Company):	Date/Time	 Received by (Signature and Company):	Sample Condition upon Receipt:

Date _____

QC Check _____ Data Entry _____ Date _____

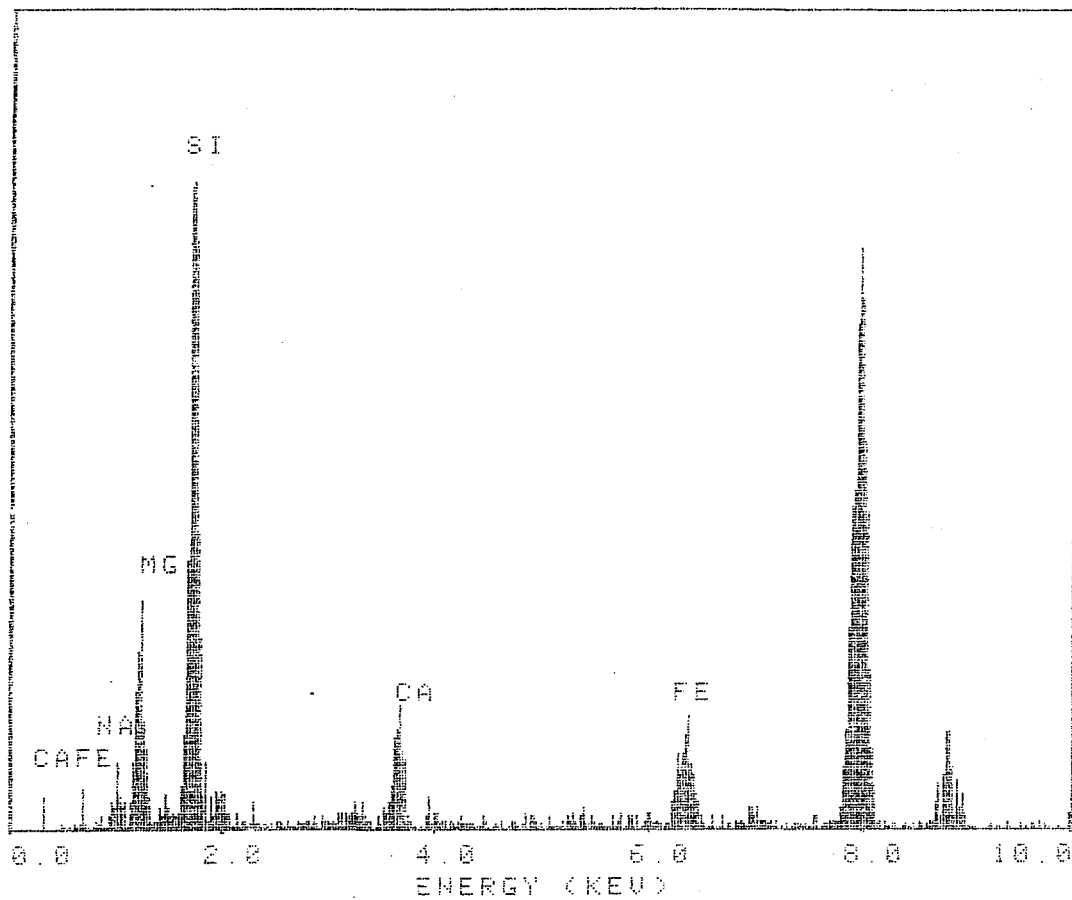
SI ML0015 1-01642 FIBER 11

AUS/OM

SI CA LL

200FS CUR: 25.0 BCNTS

60 T



7/8/00 *Handwritten signature*

7/8/00 00 15 15

7402 - TEM Air Worksheet

Lab ID: 8124

Client: CDM Federal Programs, Corp.

Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Project: Ambient Air Samples

Billing Number

ML0015

Logged: 27-Jun-00

TAT: 1 Day

Sample ID: I-01644

Location: Ambient Air Sample

Results Due

Tuesday, June 27, 2000

9:00 AM

Voltage (kv): 100

Vol (liters): 1310

Filter Size: 25 mm

Filter Type: ☐ MCE ☐ PC

Filter Pore Size: _____

GO Analyzed: 0

Special Handling Instructions

[illegible]**Total Asbestos (N)**

Total Non-Asbestos

Total Fibers (T)

Asbestos Fibers Present

<input type="checkbox"/> Chrysotile	<input type="checkbox"/> Anthophyllite
<input type="checkbox"/> Amosite	<input type="checkbox"/> Crocidolite
<input type="checkbox"/> Actinolite	<input type="checkbox"/> Tremolite

☐ Picture _____

☐ Spectrum _____

☐ SAED _____

Picture Types 44 /

Nonasbestos Fibers Present

☐ (1) Gypsum
☐ (2) Glass
☐ (3) Cellulose
☐ (4) Organic Fibers
☐ (5) Fibers Containing

Calculations

Filter Size: 25 mm EFA: 385 mm²
Grid Opening Area: 0.013 mm²

Grid Box # 12.001 Row 0 Column 3, 4
Filter Accepted for Analysis: ☐ Yes ☒ No
If no, reason for rejection: over loaded

Analyst N. H. H. Scope Test Cx11 Date 7/9/04

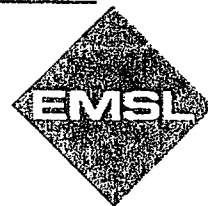
QC Check _____ Data Entry _____ Date _____

EMSL Analytical, Inc.

1 Cooper Street

Westmont, NJ 08108

Phone: (609) 858-4800 Fax: (609) 858-9551



Attn.: Tim Wall

CDM Federal Programs, Corp.

One Cambridge Place

50 Hampshire St.

Cambridge, MA 02142

Tuesday, June 27, 2000

Ref Number: ML0012

Analysis Date: 6/27/00

PHASE CONTRAST MICROSCOPY (PCM) FIBER COUNT BY NIOSH METHOD 7400, ISSUE 2, 4TH EDITION, 8/15/94

Project: Personal Air Monitoring Samples

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	fibers/ mm ²	LOD fib/cc	fibers/cc
IR-00039	Personal Air Monitoring Sample	6/25/00	417.00	Sample Was Overloaded				
IR-00041	Blank	6/25/00	0.00	<5.5	100	<7.0		
IR-00042	Personal Air Monitoring Sample	6/25/00	393.00	79.0	100	100.64	0.007	0.099
IR-00044	Blank	6/25/00	0.00	<5.5	100	<7.0		

BLANK ID: IR-00041, IR-00044

Adrian Arav

Analyst

Approved
Signatory

Disclaimers: LOD = Limit of Detection. This method assumes the limit of detection is 7 fibers/mm². The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL.

Analysis performed by EMSL Mobile Lab ()

PCM Fiber Count - NIOSH Method 7400, Issue 2, 4th Edition, 8/15/94

Client: CDM Federal Programs, Corp.

Logged: 6/27/00

TAT: 1 Day

Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Date/Time Due: 6/27/00 9:00 AM

Phone: (617) 452 - 6257

Fax: (617) 452 - 8257

Project: Personal Air Monitoring Samples

Special Handling	Billing Number ML0012
------------------	------------------------------

Sample ID	Location	Sample Date	# Fibers	# Fields	Volume (L)	Fibers/mm ² = E	Fibers/CC = C	Overloaded
IR-00039	Personal Air Monitoring Sample	6/25/00	-	0	417			✓
IR-00041	Blank	6/25/00	0	100	0			
IR-00042	Personal Air Monitoring Sample	6/25/00	79	100	393			
IR-00044	Blank	6/25/00	0	100	0			

QC Checks

IR-00042

Analyst

[Signature]

Scope

Computer

EMSL Analytical, Inc.

Phone: (856)-858-4800

Fax: (856)-858-1292

EMSL

NVLAP#200481-0

Client: CDM Federal Programs, Corp.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02142

EMSL Project ID: ML0013

Date Received: 27-Jun-00

Date Analyzed: 07-Jul-00

Report Date: 07-Jul-00

Page: 1

Client Project ID: Personal Air Monitoring Sample

Summary of Analytical Results

Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH 7402

Client	Asbestos	Asbestos	Non Asbestos	Total	Asbestos	Original (PCM)	7402 Adjusted**
Sample ID	Fibers	Type(s)	Fibers	Fibers	% of Total	Conc. (f/cc)	Concentration (f/cc)
IR-00039	N/A	N/A	N/A	N/A	N/A	N/A	Over Loaded
IR-00042	58.0	Tremo/Actino	14.0	72.0	81	0.099	0.080

Average Number of Asbestos Fibers on Field Blanks = N/A

Average Number of Non-Asbestos Fibers on Field Blanks = N/A

This method requires 2 field blank analyses per set. If none are submitted then the values reported are not blank corrected.

This method reports only fibers greater than or equal to 5 microns in length and 0.25 microns in width.

In the absence of PCM data the information is based on the TEM analysis only.

Method Detection Limit- 1 confirmed asbestos fiber above 95% of expected mean blank value

**Actual reported concentrations do not incorporate the analytical sensitivity of the PCM analysis. In some cases, the 7402 adjusted results may be reported "<LOD" below the analytical sensitivity of PCM (Limit of Detection)



Approved Signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel.

Analysis performed by NIOSH 7402 Issue 2 August 15, 1994

TEM make: Joel 100cxII

Detector: PGT

EMSL7402rpt6.00

7/8/00

7402 - TEM Air Worksheet

Lab ID: 8118

Client: CDM Federal Programs, Corp.

Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Project: Personal Air Monitoring Sample

Billing Number

ML0013

Logged: 27-Jun-00

TAT: 1 Day

Sample ID: IR-00042

Location: Personal Air Monitoring Sample

Results Due

Tuesday, June 27, 2000

9:00 AM

Special Handling Instructions

Voltage (kv): 100

Vol (liters): 393

Filter Size: 25 mm

Filter Type: ☐ MCE ☐ PC

Filter Pore Size: _____

GO Analyzed: 4.1 33

NSD = No Structures Detected

m³ = Liters/1000

ED OBSERVATION							ED OBSERVATION						
G.O. No.	G.O. I.D.	Non Asbestos	Asbestos	Length	Thick	EDAX Type	G.O. No.	G.O. I.D.	Non Asbestos	Asbestos	Length	Thick	EDAX Type
1	C-15	1	Tremolite	18.5	.80	1 F	2	C-7		Tremolite	8.1	.75	1 F
1	C-15		Tremolite	7.7	.75	1 F	5	C-7		Tremolite	12.5	.91	1 F
	C-13	1	Tremolite	7.2	.70	1 F		C-5	1+	Tremolite	7.5	.24	1 F
	C-13		Tremolite	28.3	.50	1 F		C-5		Tremolite	3.5	.27	1 F
	C-13		Tremolite	6.5	.20	1 F		C-5		Tremolite	12.2	.25	1 F
2	C-13		Tremolite	2.0	.45	1 F	6	C-5		Tremolite	4.0	.28	1 F
	C-11	1	Tremolite	7.6	.26	1 F		C-3		Tremolite	6.0	.80	1 F
	C-11		Tremolite	5.1	.12	1 F		C-3		Tremolite	28.0	.91	1 F
	C-11		Tremolite	13.5	.80	1 F		C-3		Tremolite	4.0	.25	1 F
3	C-11		Tremolite	7.5	.50	1 F	7	C-3		Tremolite	4.8	.26	1 F
4	C-9	1+						F-14		Tremolite	7.3	.8	1 F
	C-7	1+	Tremolite	8.3	.70	1 F		F-14		Tremolite	5.2	.50	1 F
	C-7		Tremolite	16.0	.27	1 F		F-14		Tremolite	6.0	.22	1 F
	C-7		Tremolite	14.2	.28	1 F	8	F-14		Tremolite	12.5	.90	1 F
	C-7		Tremolite	8.0	.85	1 F	9	F-12	11	Tremolite	9.8	.20	1 F
	C-7		Tremolite	6.0	.20	1 F		F-10		Tremolite	11.0	.23	1 F
TOTALS		8	15				TOTALS		4	16			

Total Asbestos (N) 104

Total Non-Asbestos 58

Total Fibers (T) 162

Asbestos Fibers Present

- ☐ Chrysotile ☐ Anthophyllite
☐ Amosite ☐ Crocidolite
☐ Actinolite ☐ Tremolite

- ☐ Picture _____
☐ Spectrum _____
☐ SAED _____

Picture Types _____

Nonasbestos Fibers Present

- ☐ (1) Gypsum
☐ (2) Glass
☐ (3) Cellulose
☐ (4) Organic Fibers
☐ (5) Fibers Containing _____

Calculations

Filter Size: 25 mm

EFA: 385 mm²Grid Opening Area: 0.013 mm²Grid Box # ML001 Row N Column 12Filter Accepted for Analysis: ☒ Yes ☐ No

If no, reason for rejection: _____

Analyst [Signature] Scope TEM/CK1 Date 7/8/00

QC Check _____ Data Entry _____ Date _____

7402 - TEM Air Worksheet

Lab ID: 8118

Billing Number

ML0013

Logged: 27-Jun-00

TAT: 1 Day

Client: CDM Federal Programs, Corp.

Address: One Cambridge Place

50 Hampshire St.

Cambridge, MA 02142

Sample ID: IR-00042

Location: Personal Air Monitoring Sample

Results Due

Tuesday, June 27, 2000

9:00 AM

Project: Personal Air Monitoring Sample

Voltage (kv): 100

Vol (liters): 393

Filter Size: 25 mm

Filter Type: ☐ MCE ☐ PC

Filter Pore Size: _____

GO Analyzed: 40

Special Handling Instructions

NSD = No Structures Detected

m³ = Liters/1000

G.O. No.	G.O. I.D.	ED OBSERVATION				EDAX Type
		Non Asbestos	Asbestos	Length	Thick	
1	F-10		Tremolite	20.0	.5	1 m
	F-10		Tremolite	2.0	.27	1 m
	F-10		T/A	12.5	.45	1 F
	F-10		T/A	4.8	.24	1 F
	F-8		T/A	28.0	.22	1 B
	F-8		T/A	4.7	.80	1 F
	F-8		T/A	4.6	.22	1 m
	F-8		T/A	20.2	.27	1 F
	F-8		T/A	7.0	.27	1 F
	F-6		T/A	6.0	.48	1 F
	F-6		T/A	7.75	.25	1 m
	F-6		T/A	8.2	.50	1 m
	F-6		T/A	11.0	.80	1 m
	F-6		T/A	12.0	.75	1 F
	F-4		T/A	14.0	1.5	1 m
	F-4		T/A	3.8	.50	1 m
TOTALS		4	16			

G.O. No.	G.O. I.D.	ED OBSERVATION				EDAX Type
		Non Asbestos	Asbestos	Length	Thick	
3	F-4		T/A	3.8	.22	1 m
13	F-4		T/A	4.1	.28	1 F
	K-17	11	T/A	11.0	.20	1 m
	K-17		T/A	10.5	1.2	1 m
	K-17	11	T/A	5.1	.27	1 m
	K-17		T/A	8.0	.27	1 m
	K-17		T/A	17.5	2.1	1 m
	K-17		T/A	9.8	.27	1 F
	K-17		T/A	12.0	1.5	1 F
	K-10	1	T/A	4.8	.21	1 F
	R-10		T/A	4.8	.40	1 F
	K-8	11	T/A	2.9	.28	1 F
	K-8		T/A	5.1	.90	1 m
	K-6	11	T/A	2.5	.20	1 F
	K-6		T/A	8.0	.22	1 F
	K-6		T/A	21.0	.80	1 F
TOTALS		13	16			

Total Asbestos (N)

Total Non-Asbestos

Total Fibers (T)

Asbestos Fibers Present

- ☐ Chrysotile ☐ Anthophyllite
☐ Amosite ☐ Crocidolite
☐ Actinolite ☐ Tremolite

Nonasbestos Fibers Present

- ☐ (1) Gypsum
☐ (2) Glass
☐ (3) Cellulose
☐ (4) Organic Fibers
☐ (5) Fibers Containing

Calculations

Filter Size: 25 mm

EFA: 385 mm²

Grid Opening Area: 0.643 mm²

11

- ☐ Picture _____
☐ Spectrum _____
☐ SAED _____

Picture Types

Grid Box # 11001 Row N Column 12

Filter Accepted for Analysis: ☒ Yes ☐ No

If no, reason for rejection: _____

Analyst [Signature] Scope Test 1 Date 7/8/00

QC Check _____ Data Entry _____ Date _____

11

7402 - TEM Air Worksheet

Lab ID: 8118

Billing Number

ML0013

Logged: 27-Jun-00

TAT: 1 Day

Client: CDM Federal Programs, Corp.

Address: One Cambridge Place

50 Hampshire St.

Cambridge, MA 02142

Sample ID: IR-00042

Location: Personal Air Monitoring Sample

Results Due

Tuesday, June 27, 2000

9:00 AM

Project: Personal Air Monitoring Sample

Voltage (kv): 100

Vol (liters): 393

Filter Size: 25 mm

Filter Type: ☐ MCE ☐ PC

Filter Pore Size: _____

GO Analyzed: _____

Special Handling Instructions

NSD = No Structures Detected

m³ = Liters/1000

ED OBSERVATION							ED OBSERVATION						
G.O. No.	G.O. I.D.	Non Asbestos	Asbestos	Length	Thick	EDAX Type	G.O. No.	G.O. I.D.	Non Asbestos	Asbestos	Length	Thick	EDAX Type
2	D-5	11+	T/A	13.8	1.0	—F	2	D-5		T/A	6.0	.27	—F
	D-5		T/A	5.8	.26	—F		D-3	1	T/A	23.0	1.0	—F
1	D-15		T/A	2.5	.27	—F	1	D-3	1	T/A	8.0	.27	—F
	D-13	11+	T/A	5.0	1.0	—F		K-14	±1	T/A	17.1	1.2	—F
22	D-13		T/A	2.5	.240	—F		K-14		T/A	3.1	.45	—F
	D-11	11	T/A	7.8	.50	—F	25	K-14		T/A	12.2	.25	—F
	D-11		T/A	2.0	.25	—F		K-12	11	T/A	10.1	.25	—F
23	D-6		T/A	3.0	.20	—F	25	K-12		T/A	7.0	.20	—F
	D-9	1	T/A	1.2	.47	—F	30	K-10	1	T/A	1.9	.18	—F
	D-9		T/A	11.0	1.0	—F		K-8		T/A	23.5	.26	—F
	D-9		T/A	12.2	.23	—F		K-8		T/A	3.0	.27	—F
	D-9		T/A	4.8	.25	—F		K-8		T/A	3.5	.20	—F
24	D-5		T/A	7.0	.25	—F	31	K-8		T/A	17.1	.93	—F
25	D-7	1	T/A	1.2	.15	—F	32	K-6	11+11	T/A	7.0	.50	—F
	D-5	11	T/A	3.5	.80	—F		K-4	11+	T/A	12.4	.48	—F
	D-5		T/A	17.7	1.2	—F	32	K-4		T/A	22.5	2.2	—F
TOTALS		13	16				TOTALS		16				

Total Asbestos (N)

Total Non-Asbestos

Total Fibers (T)

Asbestos Fibers Present

- ☐ Chrysotile ☐ Anthophyllite
☐ Amosite ☐ Crocidolite
☐ Actinolite ☐ Tremolite

- ☐ Picture _____
☐ Spectrum _____
☐ SAED _____

Picture Types

Nonasbestos Fibers Present

- ☐ (1) Gypsum
☐ (2) Glass
☐ (3) Cellulose
☐ (4) Organic Fibers
☐ (5) Fibers Containing _____

Calculations

Filter Size: 25 mm

EFA: 385 mm²

Grid Opening Area: 6.943 mm²

Grid Box # ML001 Row N Column 12

Filter Accepted for Analysis: ☐ Yes ☐ No

If no, reason for rejection: _____

Analyst AL Scope TEM/IC/11 Date 7/19/00

QC Check _____ Data Entry _____ Date _____

QC Check _____ Data Entry _____ Date _____

Chain of Custody Record

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2413

ML0013 (7402)

Send to:
EMSL
(On Site Laboratory)

Field Sample ID	Sample Type	Sample Date	Volume (L)	Turn Around Time	Analysis Request
1R-00039	Personal Air Monitoring Sample	6/25/00	417.0	24 Hour	PCM 7400 followed by TEM 7402
1R-00041	Blank	6/25/00	NA	24 Hour	PCM 7400 followed by TEM 7402
1R-00042	Personal Air Monitoring Sample	6/25/00	393.0	24 Hour	PCM 7400 followed by TEM 7402
1R-00044	Blank	6/25/00	NA	24 Hour	PCM 7400 followed by TEM 7402

Samples 1R-00040 and 1R-00043 are duplicates collected for Grace. Therefore, they are not being submitted with this submittal.

END OF SUBMITTAL

Relinquished by (Signature and Company):

Date/Time

Received by (Signature and Company):

Sample Condition upon Receipt:

Adh A EMSL 6/27/00 0500

Relinquished by (Signature and Company):

Date/Time

Received by (Signature and Company):

Sample Condition upon Receipt:

EMSL Analytical, Inc.

1 Cooper Street
Westmont, NJ 08108
Phone: (609) 858-4800 Fax: (609) 858-9551



Attn.: Tim Wall

CDM Federal Programs, Corp.
One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Monday, June 26, 2000

Ref Number: ML008
Analysis Date: 6/26/00

PHASE CONTRAST MICROSCOPY (PCM) FIBER COUNT BY NIOSH METHOD 7400, ISSUE 2, 4TH EDITION, 8/15/94

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	fibers/ mm ²	LOD fib/cc	fibers/cc
1-01650	Ambient Air Sample	6/26/00	1200.00	6.0	100	7.64	0.002	0.003
1-01652	Ambient Air Sample	6/26/00	1200.00	7.5	100	9.55	0.002	0.003
1-01654	Blank	6/26/00	0.00	<5.5	100	<7.0		
1-01655	Blank	6/26/00	0.00	<5.5	100	<7.0		

BLANK ID: 1-01654, 1-01655

Adrian Arav

Analyst

Approved
Signatory

Disclaimers: LOD = Limit of Detection. This method assumes the limit of detection is 7 fibers/mm². The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL.

Analysis performed by EMSL Mobile Lab 0

Chain of Custody Record

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2413

ML008 (7400)

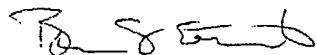
Send to:
EMSL
(On Site Laboratory)

Field Sample ID	Sample Type	Sample Date	Volume (L)	Turn Around Time	Analysis Request
1-01650	Ambient Air Sample	6/26/00	1200.0	24 Hours	PCM 7400 followed by TEM 7402
1-01652	Ambient Air Sample	6/26/00	1200.0	24 Hours	PCM 7400 followed by TEM 7402
1-01654	Blank	6/26/00	NA	24 Hours	PCM 7400 followed by TEM 7402
1-01655	Blank	6/26/00	NA	24 Hours	PCM 7400 followed by TEM 7402

Samples 1-01651 and 1-01653 were duplicates collected for Grace. Therefore, they are not included with this submittal.

END OF SUBMITTAL

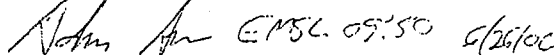
Relinquished by (Signature and Company): Date/Time



6/26/00 0750

Relinquished by (Signature and Company): Date/Time

Received by (Signature and Company):



Received by (Signature and Company):

Sample Condition upon Receipt:

Sample Condition upon Receipt:

PCM Fiber Count - NIOSH Method 7400, Issue 2, 4th Edition, 8/15/94

Client: CDM Federal Programs, Corp.

Logged: 6/26/00

TAT: 1 Day

Address: One Cambridge Place
50 Hampshire St.
Cambridge, MA 02142

Date/Time Due: 6/26/00 9:00 AM

Phone: (617) 452 - 6257

Fax: (617) 452 - 8257

Project:

Special Handling

Billing Number

ML008

Sample ID	Location	Sample Date	# Fibers	# Fields	Volume (L)	Fibers/mm ² = E	Fibers/CC = C	Overloaded
1-01650	Ambient Air Sample	6/26/00	6.0	100	1200			
1-01652	Ambient Air Sample	6/26/00	7.5	100	1200			
1-01654	Blank	6/26/00	0.0	100	0			
1-01655	Blank	6/26/00	0.0	100	0			

QC Checks

Scope

Analyst

Computer

EMSL Analytical, Inc.

Phone: (856)-858-4800

Fax: (856)-858-1292



NVLAP#200481-0

Client: CDM Federal Programs, Corp.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02142

EMSL Project ID: ML009

Date Received: 26-Jun-00

Date Analyzed: 26-Jun-00

Report Date: 27-Jun-00

Page: 1

Client Project ID: Ambient Air Sample

Summary of Analytical Results

Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH 7402

Client	Asbestos	Asbestos	Non Asbestos	Total	Asbestos	Original (PCM)	7402 Adjusted**
Sample ID	Fibers	Type(s)	Fibers	Fibers	% of Total	Conc. (f/cc)	Concentration (f/cc)
1-01650	ND	N/A	6.0	6.0	0	0.003	<LOD
1-01652	2.0	Tremo/Actino	6.0	2.0	25	0.003	<LOD

Average Number of Asbestos Fibers on Field Blanks = N/A

Average Number of Non-Asbestos Fibers on Field Blanks = N/A

This method requires 2 field blank analyses per set. If none are submitted then the values reported are not blank corrected.

This method reports only fibers greater than or equal to 5 microns in length and 0.25 microns in width.

In the absence of PCM data the information is based on the TEM analysis only.

Method Detection Limit- 1 confirmed asbestos fiber above 95% of expected mean blank value

**Actual reported concentrations do not incorporate the analytical sensitivity of the PCM analysis. In some cases, the 7402 adjusted results may be reported "<LOD" below the analytical sensitivity of PCM (Limit of Detection)

Approved Signatory

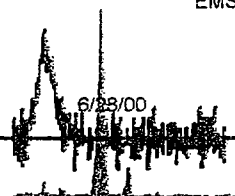
EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel.

Analysis performed by NIOSH 7402 Issue 2 August 15, 1994

TEM make: Joel 100cxII

Detector: PGT

EMSL7402rpt6.00



Chain of Custody Record

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2413

ML009 (7402)

Send to:
EMSL
(On Site Laboratory)

Field Sample ID	Sample Type	Sample Date	Volume (L)	Turn Around Time	Analysis Request
1-01650	Ambient Air Sample	6/26/00	1200.0	24 Hours	PCM 7400 followed by TEM 7402
1-01652	Ambient Air Sample	6/26/00	1200.0	24 Hours	PCM 7400 followed by TEM 7402
1-01654	Blank	6/26/00	NA	24 Hours	PCM 7400 followed by TEM 7402
1-01655	Blank	6/26/00	NA	24 Hours	PCM 7400 followed by TEM 7402

Samples 1-01651 and 1-01653 were duplicates collected for Grace. Therefore, they are not included with this submittal.

END OF SUBMITTAL

Relinquished by (Signature and Company): Date/Time

6/26/00 0950

Relinquished by (Signature and Company): Date/Time

Received by (Signature and Company):

EMSL 09:50 6/26/00

Received by (Signature and Company):

Sample Condition upon Receipt:

Sample Condition upon Receipt:

12

17

p2

33 ML009 1-01652 FIBER 1

AVS/ON

S3

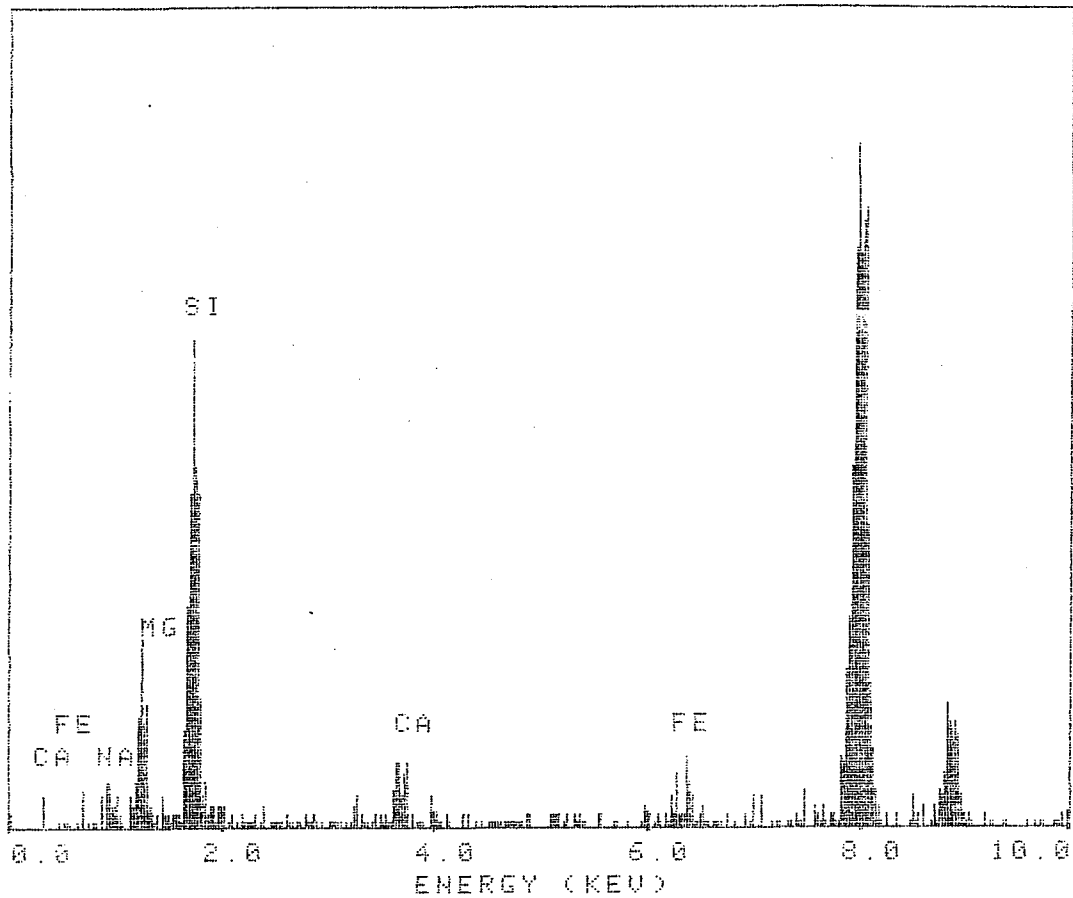
CA LL

CUR: 0.0

00NTS

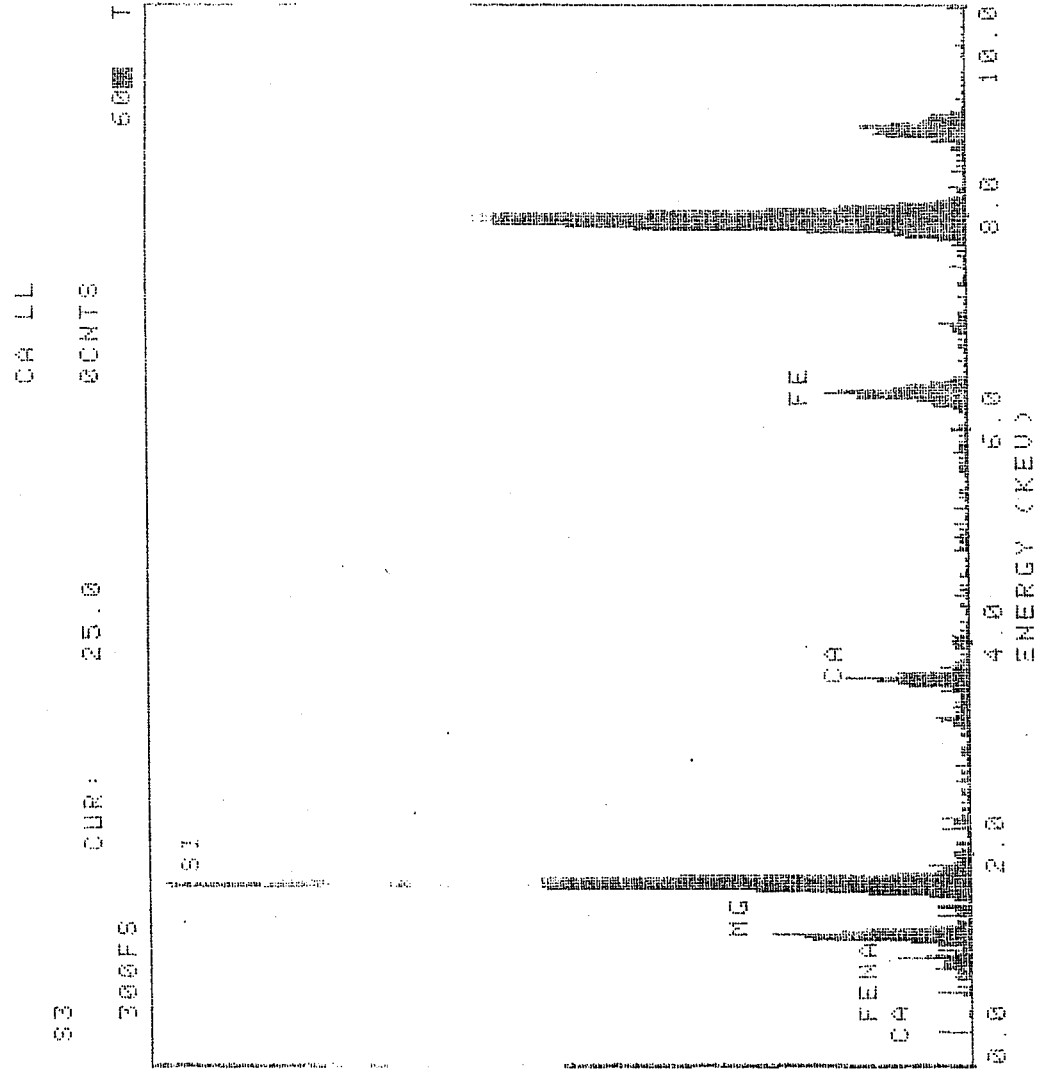
100FS

60 T



6/26/00 Adh
24 Nov-99 15:40

33 NL009 1-01562 FIBER 2 AUS/ON



6/26/00 *Alh*
~~24 May-99 15-15~~

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108

Phone: (609) 858-4800 Fax: (609) 858-4960 Email: ssiegel@EMSL.comAttn: CAMP DRESSER & MCKEE
ONE CAMBRIDGE CENTER
50 HAMPSHIRE ST.
CAMBRIDGE, MA 02142

Fax: 617-452-8257

Phone: 617-452-6257

Project: ML0012

Customer ID: DRES51

Customer PO:

Received: 07/21/00 11:12 AM

EMSL Order: 040012187

EMSL Project ID:

Analysis Date: 7/24/2000

**Asbestos Analysis of Air Samples by Transmission Electron Microscopy via NIOSH
Method 7402**

Sample	Volume (Liters)	Non Asbestos Fibers	PCM F/cc	Asbestos Type(s)	Asbestos Fibers	Asbestos % of total	7402 Adjusted (TEM) F/cc	Notes
IR - 00039 040012187-0001	417	2	n/a	Actinolite	1	33	<0.006	Reported using TEM data only

NIOSH 7402 method only reports fibers $\geq 5\mu\text{m}$ in length and $\geq 0.25\mu\text{m}$ in width. This method requires 2 field blank analyses per set. Since no blanks were analyzed, the results are not blank corrected.

Average number of asbestos fibers on field blanks: n/a

Average number of non-asbestos fibers on field blanks: n/a

Ron Mahoney

Analyst

Stephen Siegel, CIH
or other approved signatory

EMSL is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc.

Analysis performed by EMSL Westmont (NY ELAP #10872, AIHA #100192)